

## **REMARKS**

Claims 9, 23-25, 31, 34, and 35 were pending in the application. By this paper, claims 9, 23, and 31 have been amended and no claims have been canceled. Reconsideration and withdrawal of the rejections are hereby respectfully solicited in view of the foregoing amendments and the following remarks.

### **In-person Interview**

The applicants wish to kindly thank Examiner Staicovici for agreeing to and conducting the personal interview with the undersigned on November 4, 2003, particularly since this case is under final rejection. Though no particular agreement was reached during the interview, productive discussion took place. This paper reflects the substance of the interview.

### **Claim Rejections - 35 U.S.C. §112**

Claims 9, 31, 34, and 35 have been rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, claim 31 has been rejected for including the limitation of "a nozzle plate substrate" as being part of the claimed apparatus, which allegedly does not have support in the original disclosure. Claim 9 has been rejected for reciting a structure that does not positively recite at least three reflecting surfaces to produce the recited beam inversion and redirection.

Claim 31 has been amended herein to specifically recite a system for forming a nozzle in a nozzle substrate, wherein the system includes both the nozzle forming apparatus and the substrate in which a nozzle is formed. Claim 9 has been amended herein to specifically recite that the apparatus includes at least three reflecting surfaces in order to achieve the beam inversion and redirection characteristics recited in the claim. The applicants believe that the rejections under §112 are overcome by the foregoing amendments and remarks.

### **Claim Rejections - 35 U.S.C. §103**

Claims 9, 23, 24, and 31 have been rejected under 35 U.S.C. §103(a) as obvious over Nishiwaki in view of Shei, both previously of record and argued in this application. Claim 35 has been rejected as obvious over Nishiwaki and Shei, and further in view of Hizny, also previously of record in this application. Independent claims 9, 23, and 31 are addressed

separately below. Reconsideration and withdrawal of the rejections are hereby respectfully solicited in view of the foregoing amendments and following remarks.

Independent claim 9 has been amended herein to recite that the beam, having divergence, is directed at and impinges first on the face of the nozzle plate in which the nozzle outlet is formed. Claim 9 also recites that the nozzle is smaller in diameter at the nozzle outlet than at the nozzle inlet. In combination, Nishiwaki and Shei fail to disclose or suggest at least these limitations of claim 9. Nishiwaki discloses a method of forming nozzles in a nozzle plate, but does not disclose use of or the desire to use a beam homogenizer to reshape the laser beam. Nishiwaki also does not disclose directing the beam such that it is directed toward and first impinges upon the *nozzle outlet side* of the substrate 12. Nishiwaki discloses a known method wherein a beam is directed at the nozzle inlet side of the substrate using a converging beam. Shei discloses a beam shaper for laser eye surgery. The shaped beam in Shei is neither converging nor diverging, but is instead a cylindrical, circular beam. See FIG. 2 and col. 4, lines 52-63.

Even if Nishiwaki and Shei are combined, the combination fails to disclose or suggest all of the limitations of claim 9. Modifying the Nishiwaki process according to Shei would yield a process where the beam is either converging or cylindrical. The combination thus does not teach or suggest producing a beam having divergence, directing such a beam at the outlet side of the nozzle plate substrate, nor using such a beam and plate orientation to produce a nozzle tapered in the manner as claimed.

Though the applicants still disagree that the combination of Nishiwaki and Shei is proper, prior arguments to that affect are not repeated here because claim 9 is now believed to be in condition for allowance.

Independent method claim 23 has been similarly amended and now recites that the beam is directed toward and first impinges on the side of the nozzle plate in which the nozzle outlet is formed. Claim 23 also recites that the formed nozzle has a larger diameter at the inlet side than at the outlet side. Claim 23 is also believed to be in condition for allowance for the same reasons discussed above with reference to claim 9.

Apparatus claim 31 has been amended herein to recite a nozzle forming system for forming a nozzle in a nozzle plate. The system is recited as including a high energy beam source, a nozzle plate substrate, and an assembly for forming the beam. Claim 31 has further been amended to recite that the beam is directed toward and first impinges on the substrate on

a side in which the nozzle outlet is formed. Claim 31 also recites that the formed nozzle has a nozzle outlet that is smaller in size than the nozzle inlet. For the same reasons discussed above with reference to claim 9, the combination of Nishiwaki and Shei, though believed to be improper, fails to disclose or suggest the system as recited in claim 31. Claim 31 is also believed to be in condition for allowance.

The corresponding dependent claims 24, 25, 34, and 35 are also believed to be in condition for allowance in view of the foregoing amendments and remarks. Reconsideration and allowance of the pending claims in this application are respectfully solicited.

#### **Allowable Subject Matter**

The applicants gratefully acknowledge that claim 34 is considered allowable. In view of the amendments and remarks presented herein, claim 34 remains allowable. The applicants again thank the examiner for taking the time to discuss this case in person on November 4, 2003.

#### **CONCLUSION**

Claims 9, 23-25, 31, 34-35 are in condition for allowance in view of the foregoing amendments and the following remarks. Reconsideration and withdrawal of the various rejections are hereby respectfully solicited.

The examiner is invited to contact the undersigned at the telephone number listed below in order to discuss any remaining issues or matters of form that will place this case in condition for allowance.

This paper is accompanied by a Request for Continued Examination and the necessary filing fee.

A petition for a one-month extension of time and the appropriate fee also accompany this paper. No additional fee is believed due at this time. However, the Commissioner is hereby authorized to charge any fee deficiency, or to credit any overpayments, to Deposit Account No. 13-2855 of the undersigned's firm.

Respectfully submitted,

A handwritten signature in cursive script, reading "Bryan J. Lempia", is written over a horizontal line.

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